

REMARKS

This is in response to the Office Action mailed 3/13/03 (Paper No. 8). Claims 13-22 have been added. Claims 1-12 have been deleted above without prejudice. Claims 13-22 are now pending in this application.

It is noted that new claims 13-22 include features recited in claims 1-12 (now deleted), and at least with respect to these features claims 13-22 are not narrowing claims made for patentability reasons. Where changes to the language has been made, such changes, it is submitted, have been made for purposes of clarity. Further, the new claims (claims 13-22) do not introduce any new matter, and all the subject matter recited in the new claims is described in the Specification and shown in the drawings. (For example, there is support for the "hole communicating with the outside" in Figs. 3-4, and 7-8, and the hole is described on page 23, lines 2-4 of the Specification.)

Claims 5-6 have been objected to. As noted above, claims 5-6 have been deleted without prejudice.

Claims 1-12 have been rejected under 35 U.S.C. 103 as being unpatentable over Tanaka et al. in view of Nakanishi et al. As noted above, Claims 1-12 have been deleted above without prejudice. Claims 13-22 have been added. The Applicant respectfully submits that Claims 13-22 are patentable over the cited prior art.

For example, claim 13 amongst other features calls for a hole formed in the case for communicating with the outside and exposing a part of the base member (held in the case) to the outside of the case; and a thermal adhesive member having

thermal conductivity disposed between the base member and the holding member holding the semiconductor laser element.

Neither Tanaka et al., nor Nakanishi et al. disclose or suggest the features recited in claim 13. In Fig. 1, Tanaka et al. disclose a laser diode unit 1 with a laser diode 5 on a sub-mount base 3. The sub-mount base 3 is mounted on a substrate 9. A protective cover 23 is mounted on top of the substrate 9. The substrate 9 is fixed to a mounting member or casing 20. As clearly seen in Fig. 1, the cover 23 has protrusions that are received into cover mounting bores 90 in the substrate 9 (see also col. 5, lines 10-15). Hence, it is clear that cover 23 is mounted or held in (by means of cover protrusions into substrate bores) the substrate and not the other way around. Tanaka et al. do not disclose that the substrate 9 is held in cover 23. Thus, although cover 23 defines an aperture (shown in phantom) on a face of the cover (the laser diode 5 beam is directed through this aperture), this aperture in cover 23 does not expose a part of the base member (substrate 9) held in the cover 23 to the outside of the cover. Further, there is no mention whatsoever anywhere in Tanaka et al. of holes formed in mounting member 20 for communicating with outside the mounting member and exposing a part of the substrate to the outside. Rather, as seen in Figs. 4-5, the mounting member 20 in Tanaka et al. does not appear to have any holes whatsoever. Nowhere does Tanaka et al. disclose or suggest a hole formed in the case (of the module) for communicating with the outside of the case and exposing a part of the base member held in the case to the outside as otherwise called for in claim 1.

Further, Tanaka et al. disclose using a plurality of spots P along the peripheral edge of the contact area between the

substrate 9 and the unit fixing surface 20a that are simultaneously welded by laser light as shown in Figs. 4 and 5 (see col. 6 lines 5-10).

Tanaka et al. do not show any thermal adhesive, but directly welding with laser irradiation as shown in Figs. 4 and 5. Therefore, Tanaka et al. is a conventional semiconductor module comprising a holding member and a base member directly welded. Moreover, no irradiation through bores is performed in the Tanaka et al.'s device.

In Figs. 4A-4C, Nakanishi et al. disclose laser chip 40 on a silicon substrate 41 (for heat sink mounting) in turn mounted on a chip mounting part 45 of a frame body 42. The chip mounting part 45 of body 42 is mounted on protective plate 48. Nakanishi et al. do not disclose any hole formed on the case for communicating with outside to expose a part of the silicon substrate 41 or chip mounting part 45 mounted on the protective plate 48.

Further, in Fig. 17, Nakanishi et al. disclose that a cooling plate 76 extends from the chip mounting part 74. Nakanishi et al. teach that "the cooling plate 76 (77) is mounted on the frame 82 of large thermal capacity or other cooling means not shown in the drawing (for example, Peltier element, cooling fin), by screwing, soldering or high heat conductor adhesive, so that the heat from the semiconductor laser chip is released efficiently" (col. 10, lines 30-35). Mounting a cooling plate 76 extending from the module (i.e. is outside the module) to a frame of large thermal capacity or cooling means 82 (that is outside the module) is not the same as mounting a semiconductor laser element in a case of the module as called for in claim 13. There is simply no mention anywhere in Nakanishi et al. of a thermal adhesive member

disposed between the base member (fixedly held in the case) and the holding member (holding the laser element). In other words, the only thing that would be obvious (without impermissible use of hindsight) from Nakanishi et al. is to mount the module or the cooling plate outside the module to a high thermal capacity frame using a thermal adhesive, but this has nothing to do with mounting the laser element inside the module as called for in claim 13.

Neither Tanaka et al. nor Nakanishi et al. disclose or suggest the features recited in claim 13. Accordingly, combining Tanaka and Nakanishi cannot provide features not disclosed or suggested in either reference. Claims 13-17 are patentable over the cited prior art and should be allowed. Claim 18 is similar to claim 13, and should be allowed for the aforementioned reasons. Claims 19-22 are dependent on claim 18 and hence should also be allowable.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

The Commissioner is hereby authorized to charge payment for any fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,



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6/13/03

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